

CANADIAN GEOGRAPHICAL JOURNAL

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CONTENTS

FIFTY YEARS AFTER BADDECK—CANADA'S AIRCRAFT INDUSTRY

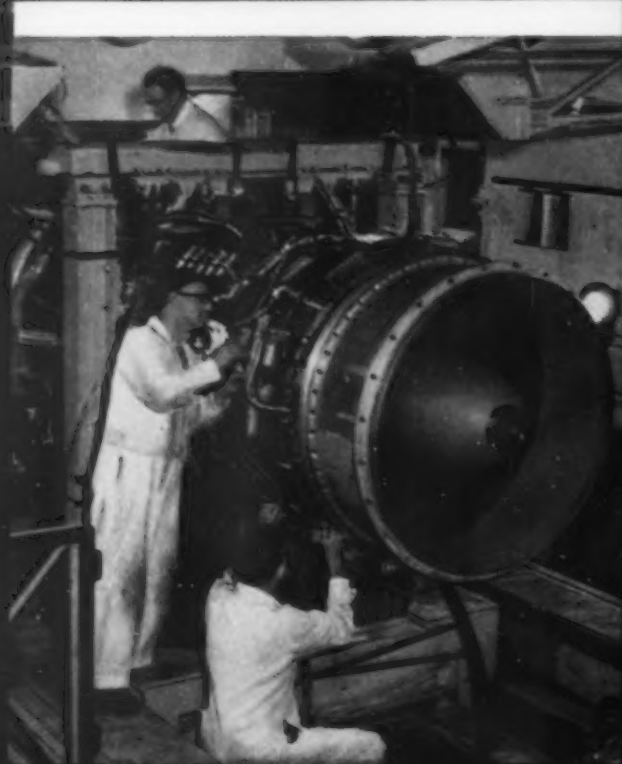
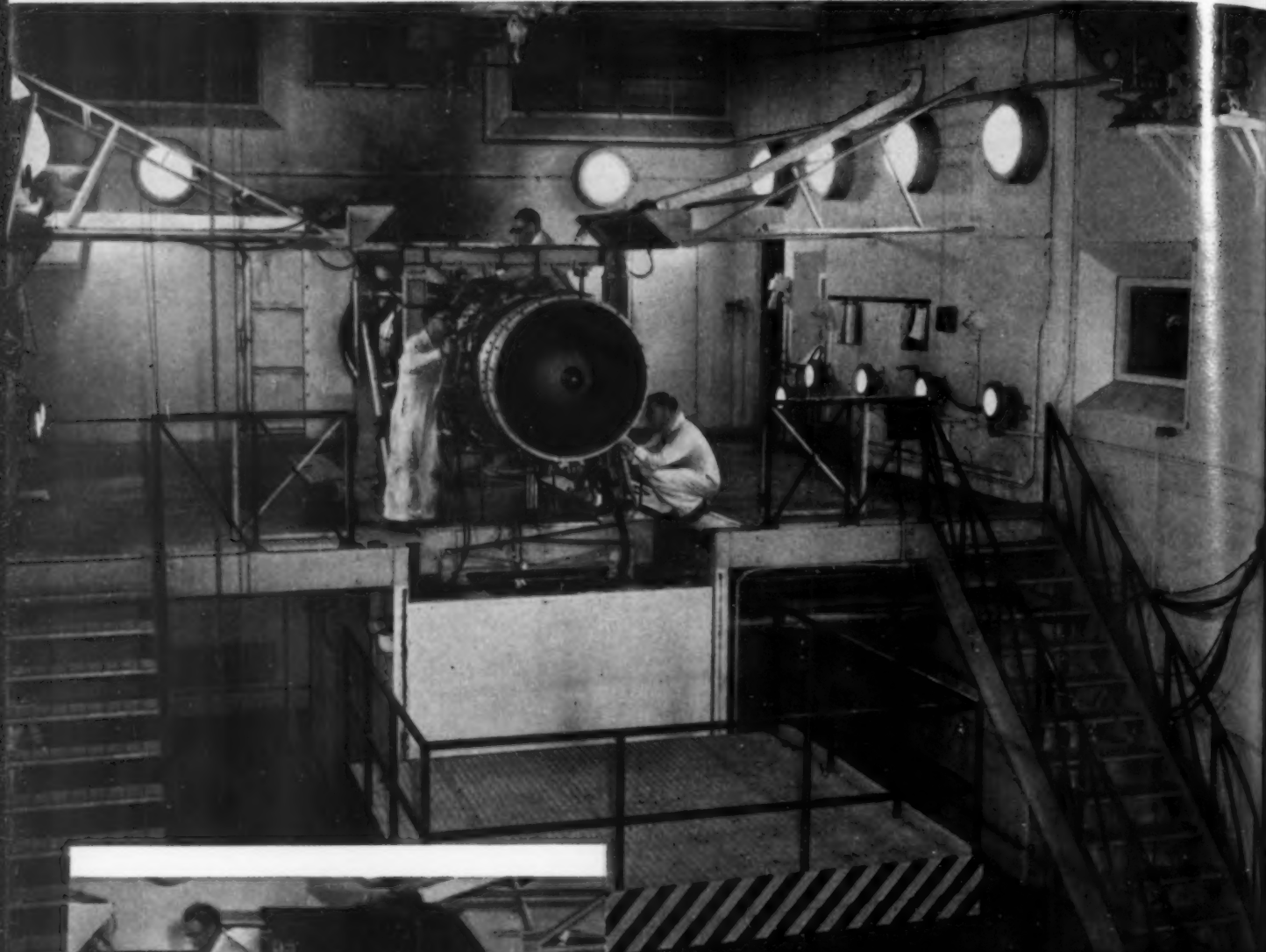
FESTIVAL OF DANCE AT LA PAZ

UNGAVA BAY—UNGAVA PENINSULA

PICTURES OF THE PROVINCES

THE WEAVERS OF WITNEY

Rehearsal for Mach 3 at 100,000 feet



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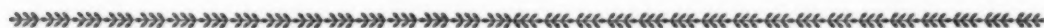
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Avro Aircraft Ltd. photograph

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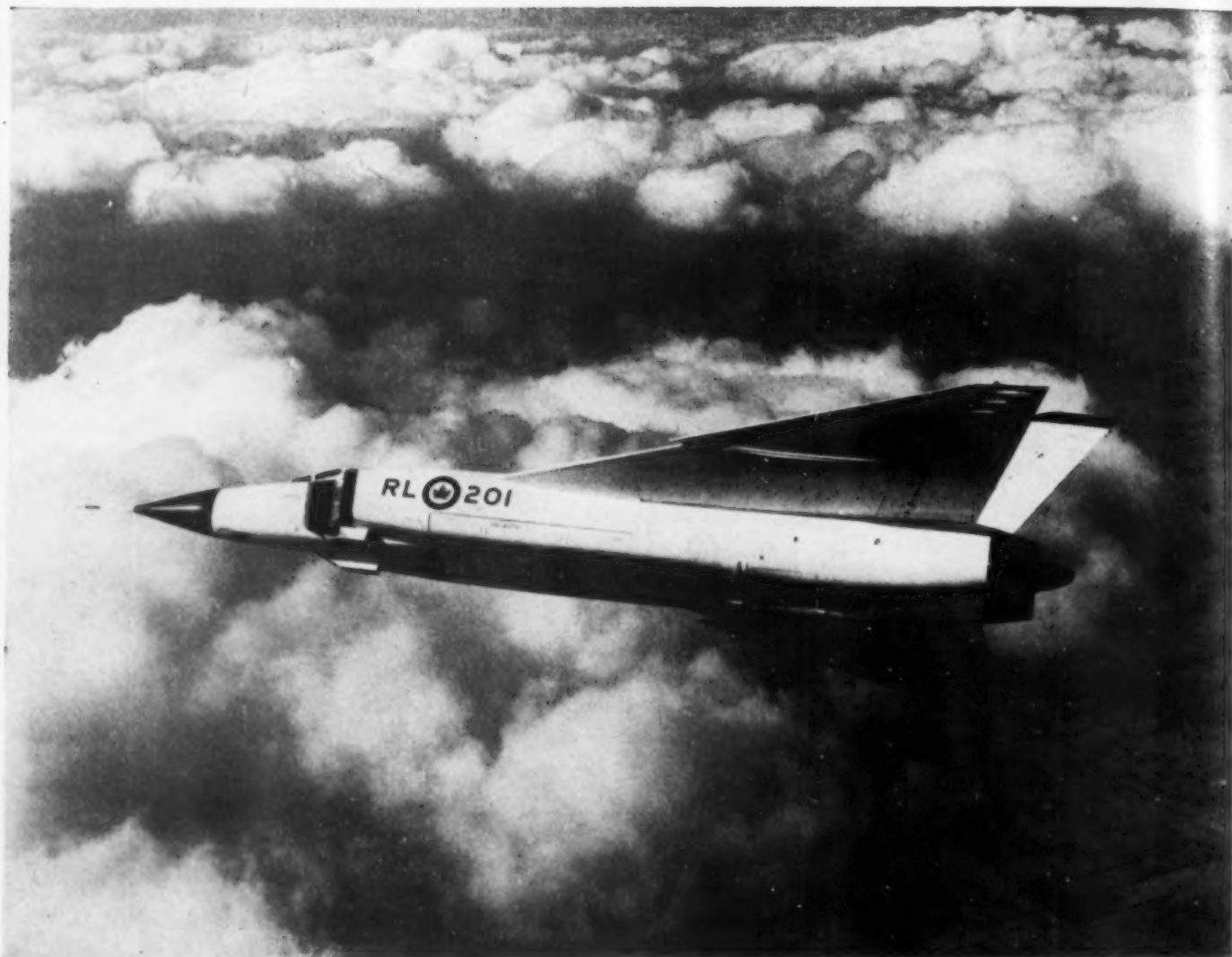


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The ultimate in manned interceptors, the Avro Arrow, displays its delta wing design over Malton.

Fifty Years After Baddeck

— Canada's Aircraft Industry

by ARTHUR MACDONALD

ON 23 FEBRUARY 1909, a primitive bi-plane known as the *Silver Dart* took off from the frozen surface of Bras d'Or Lake at Baddeck, Nova Scotia, to launch the age of powered flight in Canada. As this is written, the Canadian aircraft industry is preparing to observe the fiftieth anniversary of that historic flight with a year-long celebration in 1959.

The Golden Anniversary Year will serve to publicize the fact that, in many areas of aeronautical progress, Canada has been in the fore-

front. Aviation's pride in its achievements will, however, be tempered by the realization that, fifty years after Baddeck, this major Canadian industry has reached a critical stage in its history. With defence production levelling off and a number of important contracts running out, Canadian airplane-builders frankly admit the possibility of rough weather ahead.

Said the Air Industries and Transport Association in a recent report: "We find it somewhat disturbing that, at a time when our atten-



Rated by experts as the world's most formidable maritime reconnaissance aircraft, the Canadair CL-28 Argus is now going into service with the R.C.A.F.'s Maritime Air Command.

tion should be focussed on development of the industry for the urgent tasks ahead, our prime concern is with its imminent deterioration."

The fact that there are uncertainties in the aviation picture will come as no surprise to those who still look upon this particular field as more of an adventure than sound business. The truth is that aviation in this country has become very big business — so big that its economic well-being should be a matter of concern to every Canadian.

Canada today is among the five leading producers of aircraft in the world. The aircraft industry gives direct employment to 47,000 persons and indirectly provides work for more than 100,000 Canadians. During 1956, the last year for which complete figures are available, builders of airplanes, engines and parts bought materials worth \$138.2 millions, paid out \$146.4

millions in wages and produced goods worth \$354.5 millions. When the activities of Canadian air carriers are taken into account, it adds up to a total national production of goods and services worth more than half a billion dollars.

These are impressive statistics for an industry that less than thirty years ago employed only a thousand people and was not even listed among the top fifty industries in Canada. The industry actually dates from the 1914-18 war, when facilities were developed here for the manufacture of some 2,000 elementary trainers. With war's end, however, all manufacturing activity ceased and nothing happened until 1923 when eight aircraft were built. Only slight expansion took place in the ensuing years, until the foundations of a modern industry were laid in 1938 with the visit to Canada of the first British air purchasing mission.

As war clouds gathered over Europe, the British mission awarded a contract for eighty Hampden bombers to six separate companies which affiliated under the title Canadian Associated Aircraft Limited. The order was later increased to 160 Hampdens, all of which were sent overseas to augment British production.

Following the outbreak of war, the industry commenced such a phenomenal period of growth that it soon ranked as one of the country's largest. Production covered twenty-one different aircraft, but the manufacturers were ultimately organized to concentrate on eight standard types. Over 120,000 persons were employed in the manufacture of aircraft and equipment at the peak of production in 1944, and the total wartime output exceeded 16,000 airplanes.

While the creation of such an impressive manufacturing industry was considered to be in keeping with Canada's wartime role, it was looked upon in some quarters as extremely wasteful. The pessimists argued that a country of Canada's size could not possibly support an aircraft industry of this scope in peacetime — nor could the industry hope to compete with the United States and Britain in the export market. The prevailing view was that huge government-sponsored plants, such as those of Victory Aircraft Limited in Toronto and Canadair Limited in Montreal, would have to be written off by the taxpayer as white elephants. Fortunately, this view was not shared by key figures in the industry and in government.

It must be admitted that not all the bright plans of 1945 have worked out; even some of the most optimistic and apparently well-founded companies were unable to survive on the basis of a peacetime economy. But those who successfully made the transition have created a lusty young industrial giant which at present ranks third in employment among Canadian manufacturing industries and eighth in dollar sales. The aircraft industry comprises the following major elements:

- (a) the prime contractors, firms which accept the responsibility for manufacturing and delivering complete aircraft;
- (b) the builders of aircraft engines, both jet and reciprocating types;
- (c) the supporting industry which produces a wide range of aircraft equipment — instruments, hydraulic components, wheel and brake assemblies, engine parts, and many hundreds of radar, radio and other major electrical and electronic units;
- (d) the vast network of highly essential maintenance and repair facilities extending throughout all ten provinces and far into the north.

Best known among Canadian aviation concerns are the prime contractors — Avro, Canadair and de Havilland. Often referred to as "the big three", these firms employ more than half the people engaged in Canadian aviation and their postwar history is, to a very large extent, the story of how a mature industry was developed in this country.

The history of Avro Aircraft Limited goes back to the close of World War II, when the government-controlled Victory Aircraft plant at Malton was taken over by the Hawker-Siddely Group of Great Britain — the organization that produced the Anson, Lancaster, Hurricane and other well-known military aircraft. A new company, known as A. V. Roe Canada Limited, was established in December 1945, and five months later it acquired Turbo Research Limited, a Crown-owned company originally established to undertake research in jet propulsion. In January 1955, the two divisions began operating as separate companies, named Avro Aircraft Limited and Orenda Engines Limited, with A. V. Roe Canada Limited becoming a holding company patterned along the lines of the parent group in the United Kingdom.

The Roe organization has since acquired complete or partial control of a large number of additional companies, including the huge Dominion Steel and Coal Corporation (Dosco), thus building an industrial empire that is one of the largest in the country. Avro Aircraft employs approximately 9,600 people and is a member of Roe's four-company Aeronautics Division, which also includes Orenda Engines Limited, Canadian Car Company Limited, and Canadian Steel Improvement Limited.

Avro's major achievements have been the design, development and production of three

completely different types of aircraft — a commercial jet transport (the Jetliner) a twin-jet, long range, all weather interceptor (the CF-100); and Canada's first supersonic fighter (the CF-105). The company is also engaged in some interesting but unpublicized activities in the VTO (vertical take-off) field for the United States Air Force.

The history of Canadair Limited originates with Canadian Vickers, a pioneer manufacturer of aircraft in Canada. Canadair emerged with independent entity under government sponsorship in 1944 and, two years later, became a subsidiary of the General Dynamics Corporation of the United States, whose six operating divisions develop and produce a wide range of major weapons and equipment for the United States armed forces.

Canadair has been called "the world's most efficient aircraft production organization" and, on the evidence, such a tribute appears to be justified. At present the company has no less than four aircraft in actual production, with another major type planned for production in 1959, and a jet trainer in the development stage. This wide range of activities occupies the time and talents of some 10,000 men and women employed in three plants with nearly 3,000,000 square feet of covered factory space in greater Montreal.

The de Havilland Aircraft of Canada Limited story dates from 1928 when the firm opened for business as a subsidiary of the parent British company in a vacant shed in Mount Dennis, Ontario. Now, thirty years later, the company occupies an ultra-modern plant on the northern fringe of Toronto, employs over 3,700 people, and is one of the largest exporters of single engine STOL (short take-off and landing) utility aircraft in the world.

During the war, de Havilland built over 1,700 Tiger Moths for the British Commonwealth Air Training Plan, assembled 375 Ansons and finally went into production on the famous de Havilland Mosquito, 1,135 of which were turned out at the Toronto plant. The company's postwar success is due to three original and remarkable aircraft, all of Canadian design: the Chipmunk, the Beaver, and the Otter.

* * *

The ability of the de Havilland Beaver to operate away from prepared airports has made this a familiar sight in the Canadian North.

de Havilland Aircraft of Canada Ltd.

At present, the prime contractors have twelve separate types of aircraft in production or in prototype form. Of this number, three are nearing the end of their production life, six are being built under current contracts, and three are new designs still in the testing stage. Let us look first at the three types whose production days are numbered.

CF-100 "Canuck" — Designed by Avro to meet the need for a long range interceptor capable of operating under Canadian weather conditions, the CF-100 first flew in January 1950. Powered by Canadian-built Orenda engines, the aircraft underwent considerable development up to and including the Mark V version which is in service with the R.C.A.F. and the Belgian Air Force. Work on a Mark VI version — a guided missile carrier — was abandoned last year on a decision of the Canadian Government. Although the CF-100 first broke the so-called "sound barrier" in December 1952, it normally operates at subsonic speeds (500-600 miles per hour). Production figures have not been released but it is understood that some 500 have been turned out.

F-86 "Sabre" — This transonic fighter typifies what has been called "the Canadair





To accumulate information on characteristics of the DHC-4 Caribou in flight, de Havilland engineers are utilizing an accurate scale model, with the Otter as a flying test bed.

formula": take a proven airframe, re-design it for newer and more powerful engines, then meet or exceed all production schedules. The Canadair Sabre is actually the North American F-86 fitted with the Canadian-built Orenda engine. Still in production, it is a familiar sight in Canadian, English, South African and South American skies — as well as in the NATO countries of France, Germany, Turkey and Greece. By the time production is completed this fall, more than 1,800 units will have been delivered.

T-33 "Silver Star" — Known affectionately to pilots as the "T-Bird", this Canadair adaptation is basically the Lockheed Shooting Star, refitted with the Rolls Royce Nene engine, which results in greatly improved performance over the original. Production will terminate later this year, by which time over 600 will be in service, most of them with the R.C.A.F. which uses the T-Bird as a pilot trainer.

Current Production

DHC-2 "Beaver" — Designed by de Havilland specifically to meet Canadian bush flying requirements, the Beaver has enjoyed almost spectacular success since the prototype first flew eleven years ago. Over 1,100 Beavers have been sold and the company claims that they are serving in fifty-eight countries and territories, on seven continents and at both poles. Beaver sales account for the bulk of the \$100 million export trade de Havilland has done since the war.

The Beaver's stock in trade and the chief reason for its success is a truly amazing take-off and landing performance. With a half-ton load, it will take off in seven seconds under normal operating conditions; even the float-plane version usually gets off the water in ten seconds. The Beaver thus can operate safely in areas removed from prepared airports, an enormous advantage for a bush plane and for

certain types of military aircraft. The United States Army knows the Beaver as the L-20, a liaison aircraft, which in open competition proved so superior to United States-built types that it was ordered in quantity, despite the existence of a piece of restrictive legislation known as the Buy America Act.

DHC-3 "Otter" — Encouraged by the world wide success of the Beaver and mindful of an R.C.A.F. requirement for a similar plane with greater payload and range, de Havilland developed the idea of a "Big Beaver" — an airplane with the performance of the Beaver but with double the capacity and payload. Design work started in January 1951, and in December of the same year the Otter was airborne.

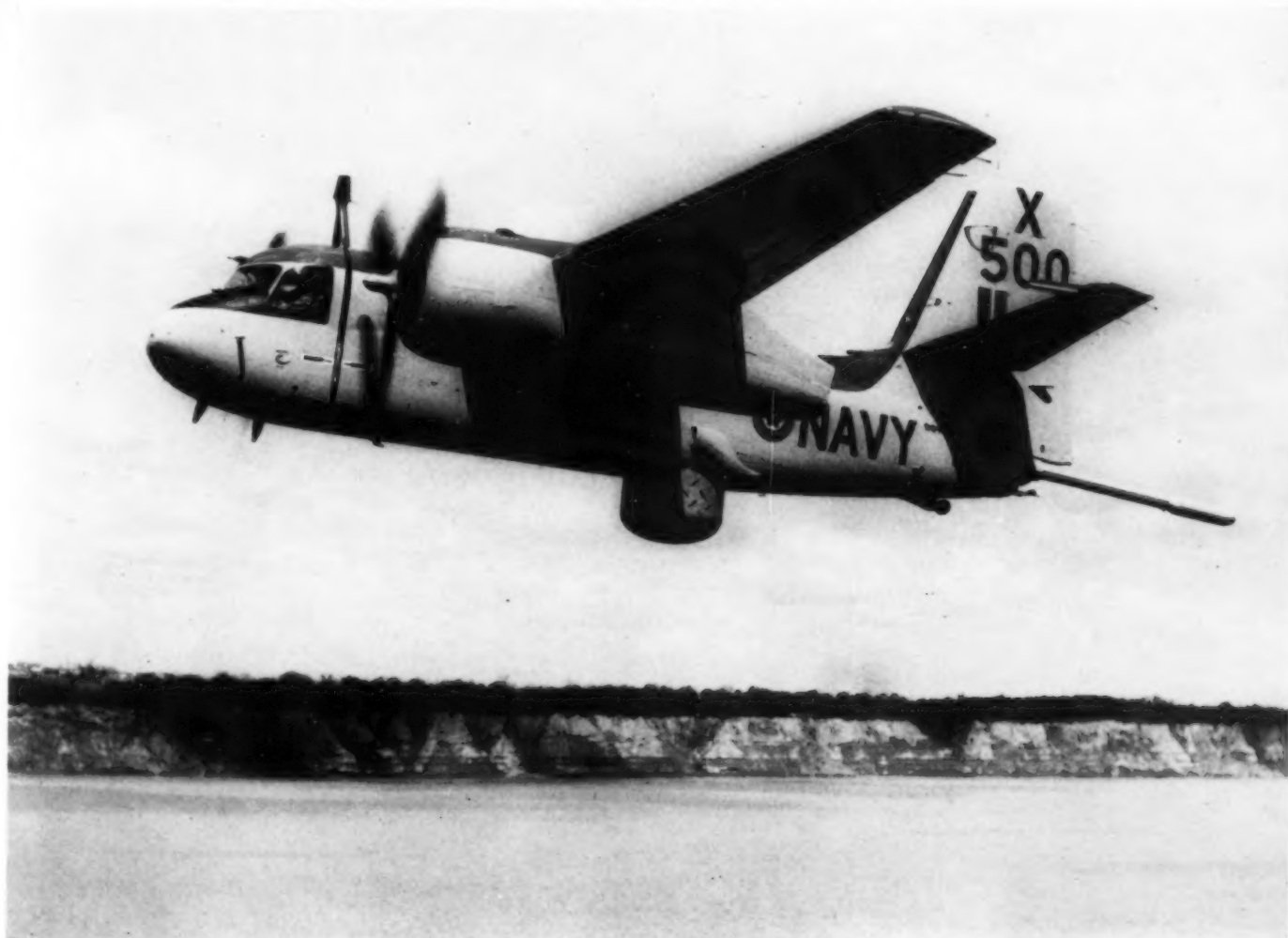
The Otter has found a ready market both in Canada and abroad as a passenger carrier, freighter, and military liaison and utility aircraft. The largest single customer has been the United States Army, followed by the R.C.A.F.

and the Indian Air Force. In all, a total of 219 military and civil Otters, delivered by the end of 1957, are operating in twenty different countries.

CS2F-1 "Tracker" — This carrier-based, anti-submarine aircraft is built under licence from the Grumman Aircraft Engineering Corporation for the Royal Canadian Navy. De Havilland is the prime contractor, although the work is extensively sub-contracted. Production will continue for at least another year.

CL-28 "Argus" — The most impressive aircraft in full-scale production in Canada today was adapted by Canadair from the Bristol Britannia to meet the special requirements of the R.C.A.F.'s Maritime Air Command. The key difference between the Britannia and its maritime cousin is in the engines. Since the Argus spends most of its operational time close to sea level, compound piston engines offering greater range and economy were chosen to re-

An effective Canadian-built anti-submarine aircraft is the CS2F-1 Tracker, at present operating from the deck of the Royal Canadian Navy's new aircraft carrier, H.M.C.S. Bonaventure.





This composite photograph illustrates how the Canadair Cosmopolitan will look when it takes to the air next year. The R.C.A.F. has ten on order.

place the Proteus turboprop engines of the original design.

The Argus is probably the most formidable maritime reconnaissance aircraft flying. Its prime target is the long range submarine, no longer just a threat to shipping but also an elusive launching base for guided missiles with nuclear warheads. With a crew of up to fifteen, the Argus can carry a complete offensive armament load of approximately 8,000 pounds to a patrol area more than 750 nautical miles from base, then search an area of 50,000 square miles and return to base with fuel for 500 miles in reserve. Fitted with tactical electronic devices weighing over 3,000 pounds, the aircraft can detect, localize and shadow either submerged submarines or surface vessels and can attack with depth charges and torpedoes capable of killing at depths of 700 feet and more.

CL-44 "Liner" — Developed from the Argus, the CL-44 is the biggest aircraft ever built in

Canada. This versatile transport is already in production for the R.C.A.F. (which calls it the CC-106) and commercial versions are being offered to the world's airlines in passenger or cargo variants for delivery beginning in 1960.

The CL-44 will seat up to 154 passengers or carry a maximum cargo payload of over 68,000 pounds. Because of its large capacity and the economy of its Rolls Royce Tyne turboprop engines, Canadair says that the new aircraft will carry cargo or passengers non-stop across the Atlantic at fifty or sixty per cent of present costs.

CL-66 "Cosmopolitan" — The Cosmopolitan fits the established Canadair pattern, since it is the proven Convair 440 Liner, modified to take two Napier Eland turboprop engines. With production of the 440 being closed out by the Convair Division of General Dynamics Corporation, the tooling was made available to Canadair, which expects to have the new air-

craft in full production by mid-1959. Because of greatly improved performance over the original design, the Cosmopolitan is considered to have a sales potential far beyond the initial ten ordered by the R.C.A.F. It will carry up to sixty passengers or 15,000 pounds of cargo at 326 miles per hour for a range of 1,700 miles.

New Designs

DHC-4 "Caribou" — The latest entry in the de Havilland STOL aircraft line is scheduled to make its first flight this summer. A twin-engine aircraft of simple, rugged and conventional construction, the Caribou is designed to provide rapid mobility for troops and equipment in places where the going might be tough. It also has a commercial future as a passenger and cargo transport for undeveloped areas.

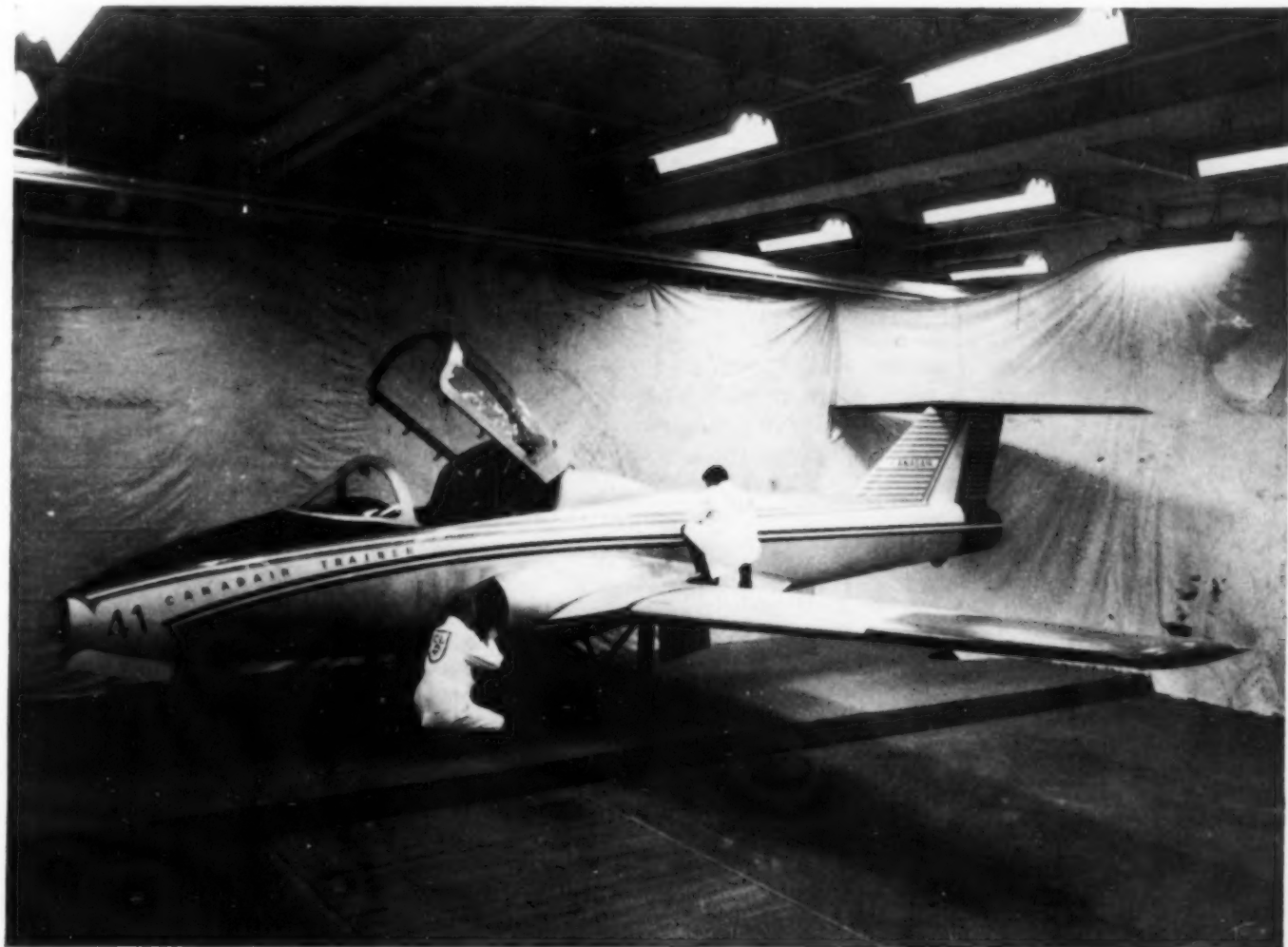
Design studies on the Caribou got underway about three years ago, and the Canadian Army later placed an order for a prototype aircraft.

Further encouragement came in the spring of 1957 when an order worth approximately two and one-half million dollars for five Caribou was placed for the United States Army. Limited production is planned for 1959 and volume production for 1960.

CL-41 Trainer — It is no secret that the R.C.A.F., like other air forces, is interested in a jet-powered basic training aircraft. With an eye to this requirement, Canadair is developing the CL-41, a two-place jet trainer to be powered by a Fairchild turbojet engine of over 2,000 pounds thrust. Combined with the T-33, Canadair suggests that the CL-41 makes it possible for air forces to utilize "all-jet" training from the initial stage up to supersonic level. Two prototypes now under construction are scheduled for completion late this year, with first flights early in 1959. A future derivative could be a four-place executive transport.

CF-105 "Arrow" — The immediate future

Two flying prototypes of the jet-powered Canadair Trainer are scheduled for completion this fall. The aircraft may later be adapted for ground support or executive transport roles.



of a very large segment of the Canadian aircraft industry rests on the dart-shaped wings of the Avro Arrow, the most ambitious aircraft design project ever undertaken in Canada. Representing an investment of some \$400 millions on the part of the Canadian Government, the supersonic delta-wing interceptor is one of the most advanced fighters of this era. Performance figures are secret, but official statements indicate a speed of over 1,200 miles per hour, a ceiling of over 60,000 feet and a range of about 1,500 miles.

The sheer size and complexity of the Arrow program almost staggers the imagination. For example, some 460 engineers, technicians, and draftsmen worked on the design and development of the aircraft and its systems. In addition, about 650 suppliers have been established for the Arrow development program, with more than 7,000 people employed outside the Avro plant in the manufacture of parts and tools.

As this is written the first Arrows are undergoing air tests and the aircraft has been flown at speeds in excess of 1,000 miles per hour. To avoid the hazards of testing a new aircraft and new engine at the same time, the early models will be fitted with United States-built Pratt and Whitney engines. The first operational Arrow, the Mark II, will be powered by the mighty Iroquois engine at present being developed by Orenda Engines Limited, and will be representative of the operational Arrow weapon system, which also includes the bomber-destroying missile, the missile guidance system, and advanced navigation and flying control equipment.

It is anticipated that another three years will pass before the Arrow is in operational use with the R.C.A.F. Meanwhile, the big question mark is one that faces all designers and builders of military equipment — will the weapon be brought into operational form before it is rendered obsolete by technological developments in other areas?

In addition to the \$400 millions already mentioned, each operational Arrow will cost about four million dollars. It is therefore not surprising that the government has withheld firm orders until more is known of Russia's future plans for the manned bomber. Two recent

developments, however, suggest that a decision has been made to put the aircraft into production: (i) the Arrow concept has been approved by the Defence Research Board; (ii) a contract has been let for production in Canada of the Sparrow II, a United States-designed air-to-air guided missile intended as armament for the Arrow.

Regardless of what the future holds for the Arrow, it has already established itself as a notable Canadian achievement — the biggest, most powerful and potentially the fastest fighter that the world has yet seen. With the guided missile age almost upon us, it will probably be the last of the piloted fighters.

* * *

To summarize: of the twelve aircraft currently being turned out by Canadian factories, only four (the Beaver, Otter, Tracker and Argus) are the subject of reasonably substantial orders — and only two of these are essentially for the Canadian Government. These are the hard facts underlying the industry's concern for its own future which prompted one industry spokesman to observe: "True, we have problems and many of them can only be solved by government action in Ottawa. What we need is a definite plan of action in support of an industry which today means so much to the strategic and economic welfare of the country."

Engines

Despite a forty-year history of aircraft production, this country did not actually manufacture a complete aircraft engine until some time after World War II. Four different aero-engines are currently being built in Canada, two jets and two piston types.

The jets are produced by Orenda Engines Limited, at Malton, Ontario, where more than 5,000 people are employed. The company is named after the first operational aircraft engine ever designed and fabricated in Canada — the Orenda — which powers the CF-100 and Sabre jet fighters. (Its predecessor, the Chinook, was a development or test engine.) The Orenda is a turbojet of some 7,000 pounds thrust and production now exceeds 3,500 units.

The Orenda will soon be replaced on the production line by its powerful successor, the



Mounted below the tail of a B-47 jet bomber, the Iroquois engine is prepared for a flight test at Malton. The power of the Iroquois approximates that used to drive the Queen Mary.

Iroquois. This mighty supersonic engine of more than 20,000 pounds thrust is slated to power the CF-105 Arrow and, as far as can be ascertained, is the world's most powerful engine at such an advanced stage of development. Probably the most impressive evidence of the engine's high potential is an agreement signed by Curtiss-Wright under which the United States firm will manufacture, sell and further develop the Iroquois in the United States.

The Canadian Pratt and Whitney Aircraft Company Limited, located across the St. Lawrence River from Montreal, produces two reciprocating piston-type engines: the P and W Wasp and the Wright R-1820 Cyclone. The former engine was originally ordered to power the large number of Harvard trainers built at Fort William by Canadian Car Company Limited, although current production is di-

rected to the export market where P and W is doing a flourishing business. The Cyclone engine is being produced for the Navy's CS2F Tracker and this program (estimated at \$20 millions) still has well over a year to run. The Cyclone is also used in such helicopters as the S-58, H-34 and H-21.

Two other well-known firms have set up extensive facilities in Canada for the repair, modification and overhaul of aircraft engines. Rolls Royce of Canada, in its Montreal plant, manufactures spare parts and overhauls engines used in the Viscount, T-33, Banshee and North Star. The Bristol Aeroplane Company of Canada controls from its Montreal headquarters three additional subsidiaries located in Winnipeg, Vancouver and Mexico. Bristol overhauls engines for the Neptune and Super Constellation, and at Winnipeg employs 1,250 per-



At the huge Canadair plant in Montreal, four aircraft are in production, two are in the planning stage, and work is in progress on guided missiles, nuclear reactors and an amphibious ground transport vehicle.

sons in the repair and modification of complete aircraft and the manufacture of components and accessories.

Parts and Accessories

There are in Canada about 3,500 sub-contractors and suppliers who produce everything from rivets to complicated major assemblies. Compared to the prime contractors, they live what might be termed a precarious existence.

In the first place, most Canadian companies are required to compete with United States and British firms which have written off their development costs against domestic contracts. And in many cases they face the possibility that the prime contractor will take certain work back into his own shop when work slackens. Despite these obstacles, the support industry has done a remarkable job of designing, modifying, developing, testing and manufacturing an astonishing variety of aviation equipment

which is the equal or superior of that being produced anywhere in the world.

Considering the trend toward automation in aircraft operations, it is not surprising that almost spectacular expansion has taken place during recent years in the field of aviation electronics. In addition to adapting many items designed outside of this country, Canadian firms have made original and significant contributions to the development of aircraft navigation and communications systems, fire control radar, missiles, flight simulators and test equipment.

In its submissions to the government, the industry continually stresses the importance of keeping together the design teams responsible for these achievements. Such teams are built up only over a long period of time and, if allowed to deteriorate, would be difficult, or even impossible, to replace. No reasonable person will argue with the industry's contention that it would be unfortunate, or even tragic, if the

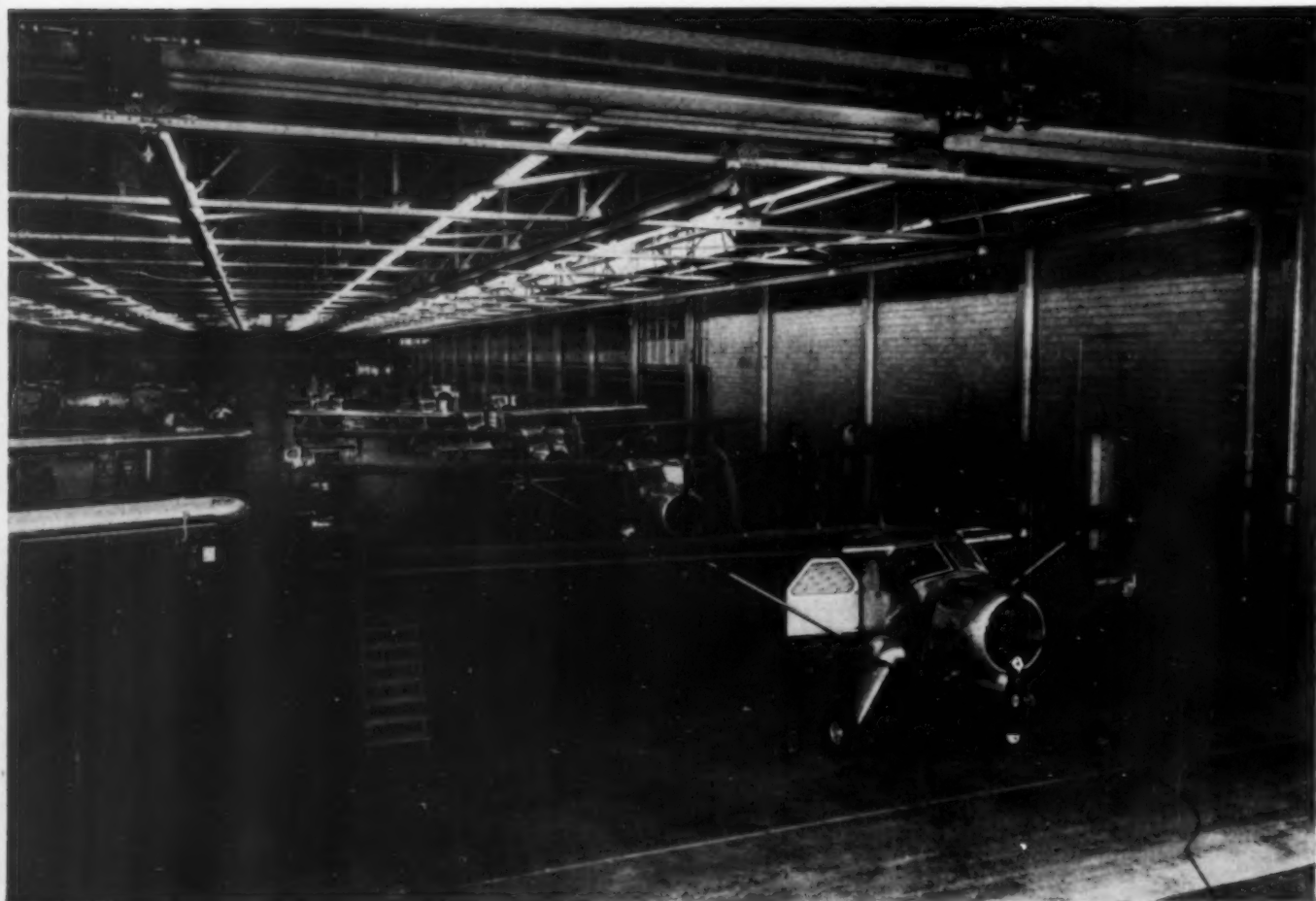


In a balanced industry, the production lines must be supported by adequate maintenance and overhaul facilities. Above: the Argus final assembly line at Canadair; below: electronic equipment being overhauled at Aviation Electric Limited in Montreal.





Above:—the growth of the aviation industry in Canada is illustrated by the new de Havilland plant north of Toronto. The company occupied the plant in 1953, but had to start expanding again in 1955. Below: after ten years on the production line, the Beaver is still in great demand.



services of these skilled scientists were lost to Canada through "failure to provide creative tasks in reasonable succession".

Maintenance and Modifications

Any review of the Canadian aircraft industry must, of necessity, concern itself primarily with the manufacturing side. This in no way minimizes the importance of the extensive maintenance and repair facilities that have been established in all parts of the country. The companies involved range from small two-man or three-man shops to organizations capable of manufacturing components and carrying out major conversions of aircraft, such as Fairey Aviation of Canada (1,000 employees), Aircraft Industries of Canada (400), and Northwest Industries (700 employees).

Many fine examples of aircraft conversions can be seen almost daily in Canadian skies. The reliable DC-3, outdated as an airliner, appears as an executive plane for corporation use; the low-and-slow Canso flying-boat seeks important mineral deposits instead of submarines; the famed Lancaster flies into action with aerial cameras instead of bombs. Even such high speed wartime types as the Mosquito and Lightning have been converted in Canadian shops to new duties in the commercial photo-mapping field.

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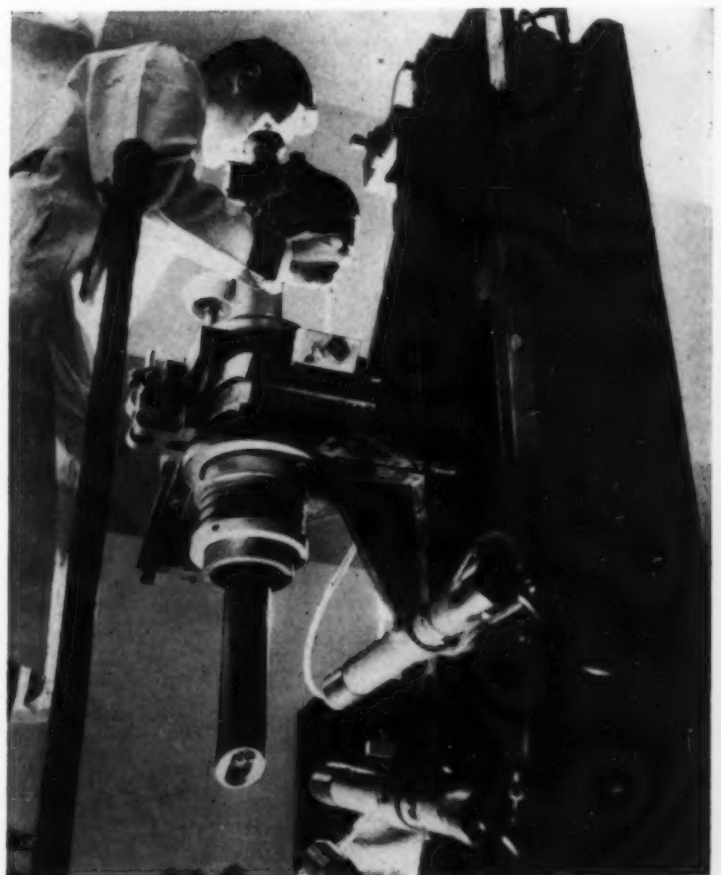
What all of this adds up to is a dynamic Canadian enterprise that stands as a great tribute to the men who created it. No one will deny that, fifty years after Baddeck, the industry faces serious problems, but there is a general feeling that satisfactory solutions will be found through the combined efforts of government and the industry itself. Among the concrete proposals advanced in recent months are the following:

- (a) essential defence spending on aviation should be planned in such a way as to bring stability to an industry which has traditionally operated on a "boom or bust" type of economy;
- (b) the industry should set up a "requirements committee" to work closely with military planners and civil operators and

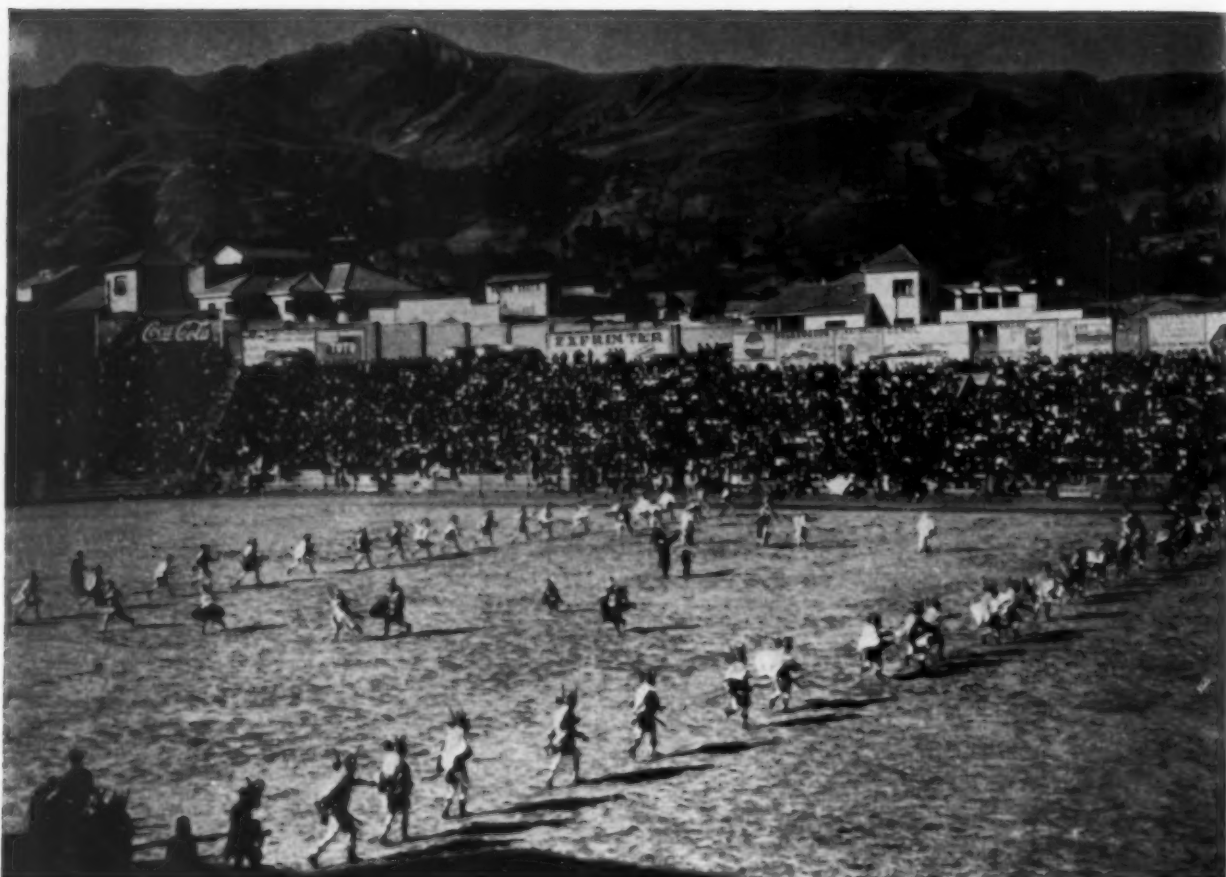
thus anticipate future requirements for aircraft and ancillary equipment of all kinds;

- (c) the government should adopt the United States policy of contributing toward the cost of fleet re-equipment for civil operators on the understanding that the aircraft and crews would be immediately available for military airlift in an emergency;
- (d) existing one-sided tariff arrangements with the United States should be adjusted to give Canadian manufacturers a fair chance of competing in the American market.

It is not suggested that these proposals in themselves offer a cure-all for the ills of an industry which, by its very nature, is required to operate on a high-overhead, low-production basis. However, if adopted in whole or in part they could conceivably make the Golden Anniversary Year of Canadian flight a golden opportunity year for an important Canadian industry.



Typical of the specialized nature of aviation equipment is this test stand for aircraft driftmeters used by Aviation Electric — the only one of its kind in Canada.



General view of the big stadium at La Paz where the Festival of Dance is held.

Festival of Dance at La Paz

by H. M. BERNEY

Photographs by the author



THE Republic of Bolivia greets the eyes of her visitors with a blazing wealth of colour spread out over vast plains. A still warmer welcome awaits those who attend the great native Festival of Dance and Music, held only once in four years, at the city of La Paz, to commemorate the anniversary of the Bolivian revolution of 1809.

My companions and I* considered ourselves fortunate to be present on one of these occasions, when the vast stadium at La Paz became the scene of all that native magnificence and colour can evolve. The Bolivian flag fluttered bravely against the dazzling blue sky, the

*The author was the leader of a three-year expedition by automobile through the Americas. The group consisted of five young people, four Swiss and one Italian. The article is based on a manuscript submitted in French.

A group of Sangas Indians gathered for the great native Festival. The colours they wear add to the gaiety of the scene.

Wearing the skins of wild animals, the performers simulate the movements of various forest creatures.

Below:—The mask worn by the devil-dancer of Oruro delights everyone by its terrifying aspect.





This pet llama looks as though he thought himself the most important individual present at the whole ceremony.

The musicians have a very important share in the Festival. They depend upon wind and percussion instruments.



national anthem pealed out as the President of the Republic arrived in state to open the proceedings, and the huge crowd cheered in wildest enthusiasm. To celebrate this gala day, the municipality of La Paz had convoked more than 2,600 dancers and musicians, all belonging to the Indian stock known as Aymara from the high Andean plateaux between La Paz and Lake Titicaca. They are immensely proud of the diversity and brilliance of their dancing costumes which they have contrived out of hand-woven cloth, embroidery, feathers, wood, leather, animal hair, and silver. They have the gift of blending colours of most contrary tone into a perfect harmony, and show boundless fancy both in design and ornament.

The origins of the dances and costumes alike are lost in antiquity. Paintings and statues found in Peru and Bolivia prove that some of these dances which we can see today

are more than a thousand years old; others are mythological, totemic, or modern. Choreography is not a strong feature in this festival with the exception of one dance, *The Demon of Oruro*. However, waves of hysterical delight overtake the spectators when the dancers give a pantomime of bulls attacking people. The pretended victims roll on the ground uttering howls which provoke unmeasured laughter from the crowd, and the mingled roars and shouts are carried in every direction by loud-speakers. Many dances are purely imitative of beasts or birds, such as the graceful leaping of the puma or the agility of the fox, the dancers being clad in the skins of the animal they are portraying. To imitate the flight of the condor, the dancers cover themselves with condor feathers, and wear the huge black wings on their outstretched arms. The llama also comes in for the high honour which his utility merits. A superb specimen, chosen as a mascot, is decked out in gay colours and he swaggers around the festival with conscious pride. (To judge by the picture, the same could be said of his master, who leads him.)

An Aymara participant in the Festival proudly displaying his gorgeous array.



Some dancers of the Kenna-Kena tribe in their hand-made gala hats and costumes, all ready to take part in the dances.

However gay the dances, the music which accompanies them is never free from melancholy. The musicians play with great enthusiasm, but the instruments are poor, chiefly varieties of flutes and drums; they have no stringed instruments. Yet they managed to produce a very passable rendering of the *Marseillaise* in our honour. In normal times these Indians are a tranquil people; their sombre bearing may be due to the great altitude at which they live. Their melancholy tone has also been attributed to a long inherited aftermath of the Spanish conquest. But this great festival proves that the dynamic *joie de vivre* still exists and is only lying dormant until some momentous occasion sets it aflame, such as this Festival of Dance. The whole performance continues till sunset, and not until the tropic night falls suddenly on the stadium do the dances and the music and the laughter cease, and these people of the Andes move silently away, drawing their robes around them tightly to protect themselves from the wind that blows down sharply from their native mountains.



A map of Northern Quebec, showing the Ungava Peninsula. The area under Newfoundland's jurisdiction is known as the Coast of Labrador.

Opposite:—Probably the most interesting topographical feature of the Ungava Peninsula is the New Quebec crater, shown here. The lake filling its depression has a diameter of 9,100 feet. Inset is a vertical photograph of the crater.

Photographs by Henry Koro and Air Laurentides

Ungava Bay—Ungava Peninsula

by ROBERT BERGERON

A NOTABLE EVENT in the history of Canadian mining was the discovery and development of iron ore in the Schefferville area*. This led to exploration and prospecting campaigns in numerous other parts of the Labrador Peninsula, and particularly in the area south and west of Ungava Bay. This area — its history, human and animal life, and mineral resources — is reviewed briefly in this article.

Before describing the country, we must try to dissipate some of the existing confusion regarding the names Labrador, Ungava, and New Quebec. Study of ancient geographical maps, particularly those of the eighteenth and nineteenth centuries, shows that to travellers and sailors of those times the word Labrador meant a peninsula in the northeastern part of the North American continent roughly based on a line connecting James Bay and the Gulf of St. Lawrence.

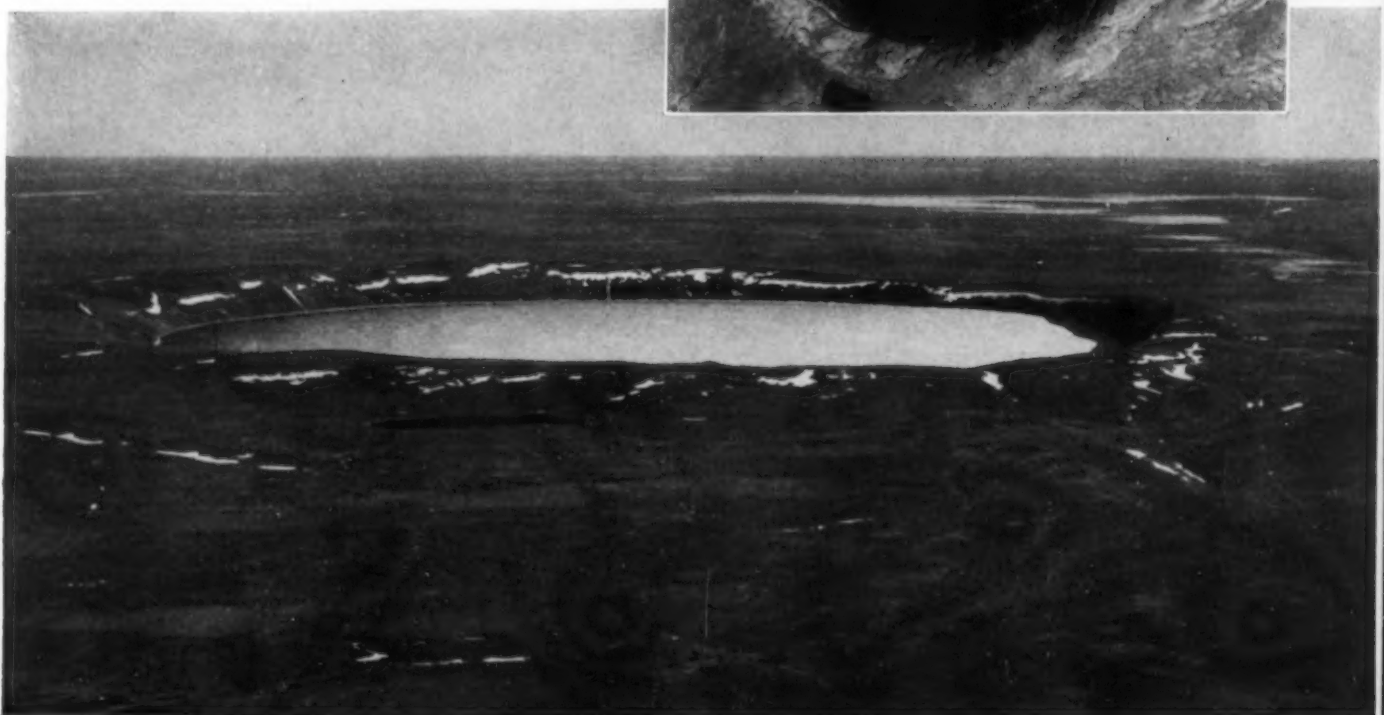
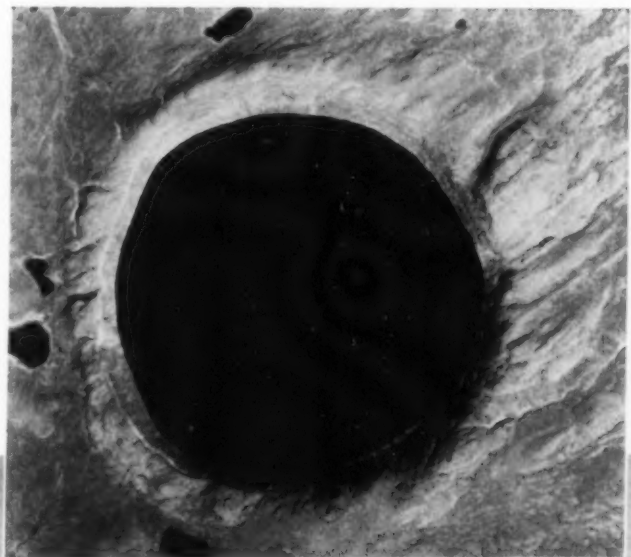
Ungava is an Eskimo word meaning "far away". The origin of the word is not definitely known as yet. But it is logical to suppose that

the Eskimos living along the Atlantic coast referred to their brothers living along the shore of Ungava Bay as the "far away" ones. The name Ungava was later given to the bay and to a poorly defined but large part of Labrador.

Prior to 1912, Ungava was a district of the Northwest Territories, established by the Canadian Government in 1895. It comprised the land within the Province of Quebec north of latitude fifty-two degrees. When annexed to Quebec, its name was changed to New Quebec.

The spur west of Ungava Bay was named "Ungava Peninsula" by R. J. Flaherty, "the

*See *Iron Ore Galore*, by J. A. Retty, Can. Geog. Journal, Vol. XLII, No. 1 pp. 2-21, January 1951; and *Knob Lake on Canada's New Frontier*, by W. G. Ross, Can. Geog. Journal, Vol. LIV, No. 6, pp. 238-245, June 1957.



father of the documentary film" and the maker of the film *Nanook of the North*, who made two traverses across the peninsula in 1912. The expression has been used by many explorers since and deserves to be retained. That part of the Labrador Peninsula which falls under Newfoundland's jurisdiction is properly called the Coast of Labrador even though, in the south, it extends some 500 miles inland from the Atlantic.

General Features of the Area

Physiographically, the Labrador Peninsula is a peneplain; that is, a land-form worn down by erosion to a nearly flat or broadly undulating plain. Since its formation, the peneplain has been tilted so that a high escarpment borders the Atlantic Ocean and Hudson Strait, and from this escarpment the plateau surface slopes gently toward the west and southwest. A major exception to this generality is a U-shaped area around Ungava Bay, wherein the surface slopes northward toward the sea.

Many islands are found along the northern coast of Ungava Peninsula. This coast is irregular and relatively steep at many points between Cape Wolstenholme and Cape Hopes

Advance. The coast is followed inland by an undulating plateau rising 1,000 to 2,000 feet above sea level; many of the highest points are between Wakeham Bay and Douglas Harbour.

Within the peninsula, two ranges of hills rise some 1,000 feet above the level of the surrounding ground. They are the Cape Smith Range, northwest of the Chukotat River which flows into Hudson Bay, and the Povungnituk Range immediately south of the Little Povungnituk River in the north-central part of the peninsula. The most interesting topographical feature within this area is the New Quebec crater, which has been considered to be of meteoric origin; its exterior diameter is 11,500 feet. The diameter of the lake filling the depression is 9,100 feet and the average height of the rim above the lake is 400 feet. The altitude of the rim is about 300 feet above the surrounding ground. The inside slope approaches forty-five degrees.

The coastline of Ungava Bay is generally low. It rises here and there into hills with a maximum elevation of 500 feet. The littoral is jagged in many places and has many small rocky islands, but it usually consists of stretches



*An Eskimo cairn
made of quartzite-
hematite flagstones.
Aubert de la Rue*



Above:—The air base built at Fort Chimo by the United States was closed in 1948, but some of the buildings and an air strip are still in use. In the background is the Kokoak River.

Aubert de la Rue



Left:—The typical aspect of the tundra in the interior of the Ungava Peninsula.

Aubert de la Rue

of clay strewn with large erratic boulders. Tidal variations are considerable, being up to fifty-four feet, the highest in the world, at Leaf Bay. The major indentations of the coastline are the estuaries of the largest rivers, which are fiords. These are not as majestic as the fiords of Norway, as the plateau in which they are incised does not rise above 600 feet.

Climate, Flora and Fauna

This territory has but two seasons — winter and summer — and summer lasts little more than the months of July and August. Around Fort Chimo, the lakes are generally free of ice about 25 June; in the northern part of Ungava Peninsula, about 10 July.

Most of the snow melts during the first two weeks in June, but many patches remain until the middle of August and some remain throughout the year. Regular, nightly frosts start about the first week in September in the vicinity of Fort Chimo. Here, also, this is about the time of the first snow-fall. The climatic conditions are slightly different south of Hudson Strait, where at Esker Lake in 1957 the first snow-fall was recorded on 13 August. The main charac-

teristic of the climate of the northern part of Quebec is its great instability. Weather changes are frequent, and although the annual precipitation is only about twenty inches, very few summer days are without a drizzle of rain. The thermal variations are also great in summer, with temperatures above 90° Fahrenheit being recorded almost every year in the Fort Chimo area.

The vegetation of this northern part of Quebec is characterized by the tundra, commonly called the Barren Lands. The southern limit of the tundra proper is a sinuous line between latitudes 58° and 59°. This line passes a few miles north of Fort Chimo. The tundra is characterized by large areas carpeted mainly with moss and lichen. In addition, there are sedges, flowering and bushy plants and, as in the river valleys opening on Hudson Strait, a few stunted willows and alders.

Game is not plentiful. Caribou, so precious to the Indian and Eskimo populations, once thrived in very large numbers in this territory, but have almost completely disappeared in the last few decades. Several reasons have been brought forward to explain this disappearance,

A group of prefabricated huts at Esker Lake, central base of operation for the companies working in the Cape Smith-Wakeham Bay area.

Henry Koro





An Eskimo family from Sugluk. The man was working for a mining company at Esker Lake in the summer of 1957.

Henry Koro

but the main reasons seem to be forest fires and inconsiderate slaughter by Indians and Eskimos. During the winter, the Eskimos capture white or polar foxes and arctic hares. They also hunt seals and kill a few polar bears along the coast of Hudson Strait. Flocks of white partridge, ducks and Canada geese inhabit the territory, and various sea birds dwell along the coasts.

If game is scarce, fish are plentiful. Salmon ascend some of the large rivers flowing into the southern part of Ungava Bay. Large trout are caught in many places in the coastal waters, and grey trout, speckled trout, arctic char, carp, whitefish, and several other species are plentiful almost everywhere in the interior.

Insects, particularly mosquitoes, are in

extreme abundance during the summer months all over the territory.

Population

There are about one hundred permanent white residents in the area. They include Hudson's Bay Company personnel, missionaries, employees of aviation companies and government officials.

The Eskimos living along the shores of the Labrador Peninsula are known as Labrador or Eastern Eskimos, and number about 2,000. They are divided into three groups: the Itivimiut (people living on the "far side"), disposed along the coast of Hudson Bay; the Tahagmiut (people living towards the sunset), dwelling along the south shore of Hudson

Strait and the west side of Ungava Bay as far as Fort Chimo; and the Sahinimiut (people of the sunrise), living along the coast from George River to Hamilton Inlet.

The Labrador Eskimos are essentially fishermen and hunters. Although their life and customs will not be described here, I would like to discuss the impact of mining on the Eskimos living along the shores of Hudson Strait and Ungava Bay. These natives are poor, caribou having disappeared and the fur trade being slack, which has resulted in a deterioration in their state of health. The advent of a mining industry probably would save them. Anthropologists and missionaries agree that the Eskimos are quite adaptable and that many of them could be trained in mining operations. A mining industry would also give rise to a market for their fish. What would be the impact of civilization on these natives? It would be to their advantage and to ours that they be integrated but not assimilated. It might be best to follow the example of the Danes in Greenland, "to attempt to put the native economy back on a footing as near as is reasonable to the original . . . and to graft in, gradually, the pattern of civilization in the process."*

Indians of the Naskapi tribe used to dwell in the northern part of the forest-covered country south of Ungava Bay, in the Fort McKenzie

area. The Hudson's Bay Company had a trading post in that locality, but this was closed in 1948. Then, the Indians living in the area numbered about 250. After the closing of the post they moved to Fort Chimo. But, being away from their natural environment, and the fur trade being poor, these Indians were dying out, when the Federal Government in 1956 moved them south near Schefferville, where it will be easier to take care of them.

Brief History of Exploration and Mineral Search in the Area

The first relatively accurate map of Ungava Bay was published in 1814 in a book called *Journal of a Voyage from Okkak on the Coast of Labrador to Ungava Bay*. The book was written by two Moravian Brothers, Kohlmeister and Kmoch. They made this trip in 1811, and on 25 August of that year they entered the mouth of the Koksoak River.

On this river, about thirty miles from the bay, is Fort Chimo. This is the most important and the best known Hudson's Bay Company post in northern Quebec. The history of this post dates back to 1828 when, in order to study the possibility of establishing a trading post in Ungava Bay, William Hendry journeyed from Richmond Gulf to Clearwater Lake, thence to the head of the Larch River and down this river and the Koksoak. Hendry's

*Dunbar M. J., *The Ungava Bay Problem*; Arctic, Vol. 5, No. 1, pp. 4-16, March 1952.

The estuary of the Payne River and the Payne Bay post.

Aubert de la Rue





A group of igloos at Wakeham Bay, where a Roman Catholic mission has been established.

trip resulted in the opening of Fort Chimo in 1830 by Nicol Finlayson and Erland Erlandson. The word *chimo* has several meanings. A likely origin for the word is given by Andrew Graham, who published a book in 1768, *Observations on Hudson Bay*. According to him, the Eskimos "rub their breast with their open hand, calling in a pitiful tone, *Chimo! Chimo!* which is a sign

of peace and friendship". Fort Chimo has remained open since 1830, except for a period of twenty-four years between 1842 and 1866. Besides the Hudson's Bay post are found in Fort Chimo a detachment of the Royal Canadian Mounted Police, Anglican and Catholic missions, a meteorological station, and an air base. The air base was built during the

Sugluk in winter. The Hudson's Bay post is on the right, the Roman Catholic mission on the left.





Murray Watts, whose investigations led to nickel-copper discoveries in the Cape Smith-Wakeham Bay belt.
Henry Koro

Second World War by the United States Government. It is located on the west shore of Koksoak River about six miles up-stream from the village of Fort Chimo. The base was closed in 1948, but some of the buildings and one air strip are still in use.

The first to explore the inhospitable wilds of the northern part of Quebec were Hudson's Bay Company men bent on establishing posts in the interior and on opening a route to Hamilton Inlet. The most famous was John McLean, who made a trip from Fort Chimo to Hamilton Inlet in 1838 and who discovered Grand Falls on Hamilton River in 1839. His notes were published in 1932 by the Champlain Society.

It is not possible in this article to mention the names of all the explorers and missionaries who contributed to the exploration of these lands, but these included one of the most important names in Canadian exploration, A. P. Low. We owe to him the first detailed descriptions of the character of the coastal regions and of the interior of the northern part of Labrador Peninsula. These are based on explorations undertaken for the Geological Survey of Canada between 1885 and 1904. Low was the

first to point out the favourable nature of the geology of certain regions for the occurrence of iron ore and base metals.

The first permanent establishment on Hudson Strait was established by the Hudson's Bay Company in 1909 at Cape Wolstenholme. This was the first step towards the expansion of the company in the Barren Lands. The cape was named by Henry Hudson to honour Sir John Wolstenholme, one of the merchants who financed his expedition in 1610. This post is now closed.

Apart from Fort Chimo, the permanent establishments now existing along the south shore of Hudson Strait and the coasts of Ungava Bay are the following: Ivugivik (Catholic mission), Sugluk (Hudson's Bay Company post, Catholic and Anglican missions), Wakeham Bay (Roman Catholic mission), Cape Hopes Advance (Department of Transport radio meteorological station), Payne Bay (Hudson's Bay Company post).

Low's reports aroused much interest at the time they were published, but it was not until 1929 that the New Quebec Mining Company undertook an expedition into the interior of the Labrador Peninsula. The expedition was headed by Dr. W. F. James and Dr. J. E. Gill, who discovered iron ore at Ruth Lake, a few miles northwest of where Schefferville now stands. Their explorations took them northward to the area at the junction of the Kaniapiskau and Swampy Bay Rivers, about eighty miles south of Fort Chimo.

About the same time a company, called Labrador-Ungava Prospectors Limited, was formed to explore the area west and southwest of Fort Chimo. The party travelled by canoe, following the route used by William Hendry in 1828. Copper showings were discovered in the Gerido Lake area about fifty-five miles west of Fort Chimo. The same showings were rediscovered in 1953 and studied in detail by a number of mining companies.

In 1931 and 1932, a prospecting party for the Cyril Knight Prospecting Company explored a belt of rock extending across the tip of Ungava Peninsula from Cape Smith to Wakeham Bay. This journey was made on foot, using dog sleds while the snow lasted and back-packing during

UNGAVA BAY—UNGAVA PENINSULA

the summer months. The party had travelled by canoe from Moose Factory on James Bay to Cape Smith. Deposits of massive sulfides containing nickel and copper were discovered. A young man, Murray Watts, was a member of that expedition. He went back to the area in 1955 and again in 1956. His work resulted in the discovery of nickel-copper showings which sparked the interest of many mining companies and which led to a large amount of exploration work being done in 1957 on what is now known as the Cape Smith-Wakeham Bay belt.

Following the discovery of high-grade iron ore in the Schefferville area, many mining companies searched for similar material north of the holdings of Iron Ore Company of Canada. Although no similar high-grade, direct-shipping ore was found, a huge tonnage of concentrating-grade iron-bearing material has been disclosed. These ores contain roughly thirty per cent iron but cannot be treated directly. Impurities must be removed and the material concentrated to a product with a content of over sixty-five per cent iron.

Many obstacles have been and still must be

overcome to bring these large, low-grade iron deposits into production. Two companies in particular, Ungava Iron Ore Limited and Ocean Iron Ore Limited, with properties located respectively west of Hopes Advance Bay and south of Payne River, have given this problem much consideration.

Conclusion

The future of Quebec's Arctic, and even of the country north of latitude 52° (New Quebec), rests in the development of its mineral and water power resources. So far as mineral resources are concerned, only about five per cent of this vast area has been adequately explored. To date the only areas examined in some detail are the Cape Smith-Wakeham Bay belt in northern Ungava, the Fort McKenzie-Fort Chimo-Leaf Bay-Payne Bay area, the Schefferville (Knob Lake) region, and a few scattered areas southeast of Hudson Bay. The Geological Survey of Canada, the Quebec Department of Mines, and mining companies will continue their explorations in this region, and it is certain that other important finds will be made.

Modern means of transportation are a great help in exploration work in the north.

Henry Koro





***Pictures of the
Provinces—XIII***

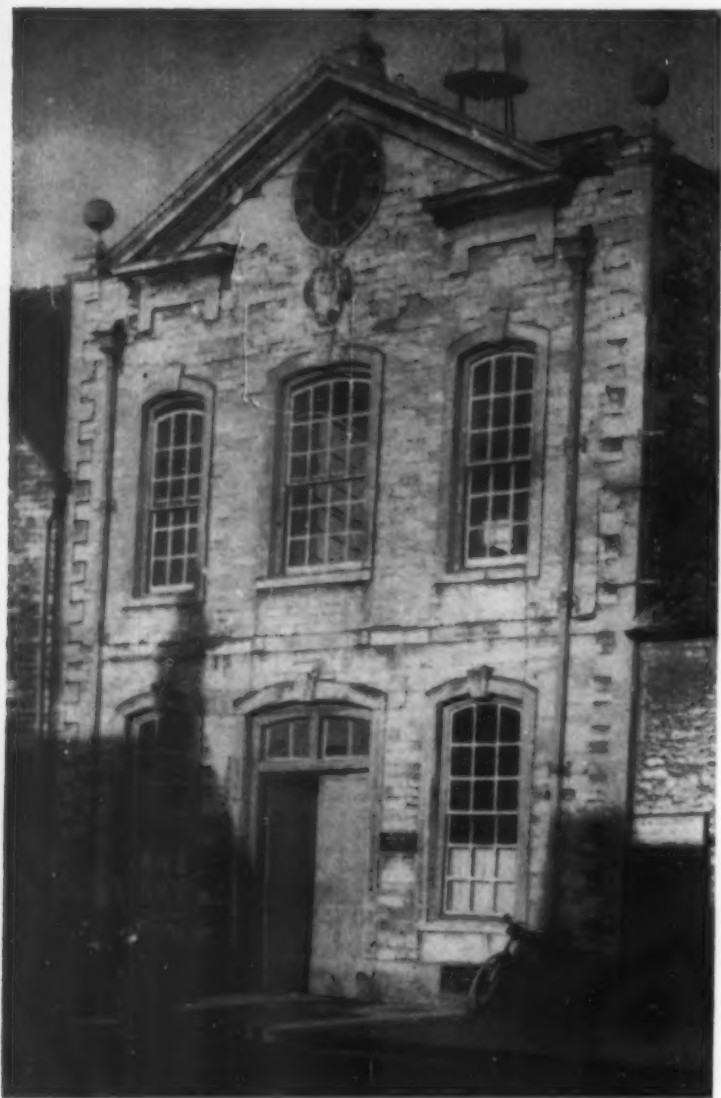
Pioneer buildings in the Bruce Peninsula of Ontario, like this one of log, are often set amid lilac bushes. It was the custom among many of the early settlers to bring along a lilac bush and plant it beside the kitchen door of a new home.

Adelaide Leitch



A particularly interesting corner of Quebec is L'Ile-aux-Coudres, an island in the St. Lawrence River about two miles offshore almost opposite the village of Les Eboulements. Here on 7 September 1535 Jacques Cartier attended the first Mass to be celebrated in New France. The island has been inhabited since 1741. Its only industries are farming and market-gardening. There are many interesting things to see, including this old windmill.

Driscoll, Quebec Provincial Publicity Bureau



The old Blanket Hall in Witney's High Street, where, two hundred years ago English weavers of the district were required to bring their blankets for grading and "hall-marking".

The Weavers of Witney

by KAY REX

Photographs by H. G. Ochs, London, England

AS FAR BACK as 600 years ago the weavers of Witney in England's Oxfordshire County were making blankets. By 1670, in North America, traders were giving them to the Indians in exchange for furs. Today they are still manufactured in this peaceful town on the edge of the Cotswolds and can be found on beds throughout the modern world.

Machines have practically replaced the spinning-wheels and hand-loom of olden days. And instead of several hundred weavers, each going his own way, four manufacturers now carry on the town's ancient industry.

The origin of the word blanket is obscure. It

was already in use at the end of the twelfth century — long before a Bristol man, Thomas Blanket, invented a woollen fabric with raised nap of extraordinary length in 1320. Witney weavers had been at work even longer. In fact, the woollen industry in the area is said to date back to the Norman Conquest. Some time after the man from Bristol announced his invention, Witney began making woollen blankets. (The exact date is unknown.)

The industry was to become of such importance that in the eighteenth century Queen Anne granted a charter to the Witney Company of Blanket Weavers. Eventually this organiza-

tion built the Blanket Hall, which still stands in Witney's High Street. Here weavers for twenty miles around were required to bring their blankets for grading and "hall-marking". The company was formed to foster blanket manufacture in the district. Instead it came close to smothering the industry by laying down too many rules and restricting competition. Eventually it lost its power, and the Hall was sold. Now its rooms are rented as business offices. However, it is owned by Charles Early and Company Limited, believed to be the oldest blanket-manufacturing firm in the world. (The business has been in the hands of the Early family for eight generations.)

Another building, named the Woodford and said locally to have been mentioned in Domesday Book, stands on the banks of the Windrush River, which itself has played a part in the blanket-weaving industry since the latter's earliest days. This structure is still owned and used by Charles Early and Company. Here the woven fabric is given an old-fashioned scrubbing or "milling" in huge washing-machines. The inside of the building reminds one of a home-laundry, with gigantic wringers squeezing out excess water, wet floors and yards of blanket. In fine weather the cloth is still stretched sometimes on the banks of the Windrush for bleaching and drying.

Witney, which is seventy-five miles northwest of London and fifteen miles west of Oxford, has a population of 7,000 persons, about 1,000 of whom are in the blanket industry. It is a delightful place to come upon unexpectedly. The buildings and walls are centuries old and look solid enough to stand centuries more. The Cotswold stone used in their structure has a warm yellow tone, particularly when bathed in the reflection of an autumn sunset.

Wool from sheep grazing on the surrounding hills continues to be used in the manufacture of Witney blankets. Much also is imported. In the warehouses of the Early Company stand bales from Australia and New Zealand. South Africa and South America also contribute their share.

The making of a blanket begins with the blending of the wool according to the quality of cloth desired. Carding follows, the wool being passed between rollers covered with fine

wire teeth — large combs which separate and smooth the fibres and remove foreign particles such as dust and vegetable matter. Spinning and weaving come next, processes which are much the same as for other kinds of cloth. The wool is spun into weft and warp yarn. For the warp, it is spun with much more twist to give it added strength.

As the warp yarn does not have to be fitted into shuttles, it is spun into large packages. A steel drum, known as a cheese, is filled with the warp thread. Eventually the cheeses are transferred to what is known as the beaming frame. Warp threads run the length of the blankets and the warps are beamed to make the blankets wider than their finished size to allow for the milling. This is regarded as essential in order to obtain a firm cloth structure for the "raising".

Raising seems like magic in the eyes of a layman. The blanket, as it comes from the loom, appears like ordinary coarse cloth. Sluicing in hot water and soap shrinks it to approximately the required size. Then it is ready for the process of bringing out the pile.

In most cases the cloth is raised by passing it through a machine known as a double or single action moser. Thousands of pricking points pull or "raise" the pile on the fabric, first on one side, then on the other. The process is repeated until the woolly surface with which we are familiar is produced.



A weaver of Witney checking teazels, a species of thistle once used extensively to raise blankets. Today they are used only on the finest quality cloth.



Wool from all over the world is used in the manufacture of Witney blankets. A weaver of Charles Early and Company picks over wool to remove tar and other foreign matter before the wool passes through the carding machine.

The teazel, a species of thistle cultivated in the Western Counties, once was used extensively to raise blankets. Nowadays it is too expensive to use on anything but the finest quality cloth. Many "teazel machines" still use the actual teazel, but some have wire teeth instead.

By-products exist even in blanket manufacture. Fluffy top wool removed in the raising is packed in bales and shipped away to be converted into everything from felt to wool socks. The Early family also runs a profitable side-business of washing and reconditioning old blankets. An average of 3,000 blankets arrive weekly during the summer for washing and re-raising.

Cutting into required lengths, whipping with yarn or binding with ribbon, and packaging are all that remain to be done once the new blanket has been raised. Then it is ready to be dispatched by train, aeroplane or steamer along the same routes it once was sent by sailing-vessel and ox-wagon.

Many of today's blankets still bear traces of yesterday. For example, the Early Company manufactures a crimson blanket with black border and four black points on one side. These symbols date from the days when an Indian who could not read knew that four marks on a blanket meant that it would cost him four beaver skins.

EDITOR'S NOTE-BOOK

Arthur Macdonald (*Fifty Years After I addeck—Canada's Aircraft Industry*), after six years' wartime service with the Royal Canadian Air Force, joined the staff of the Air Cadet League of Canada as editor of *Canadian Air Cadet Magazine*, later replaced by the *Air Cadet Annual*. He was appointed Publicity Director of the league in 1946 and Assistant General Manager in 1955. Mr. Macdonald has written a number of articles for aviation publications.

* * *

H. M. Berney (*The Festival of Dance at La Paz*) is a native of Switzerland with a strong penchant for travel by automobile. He led a group that spent three years motor-ing through the Americas. He has also driven from the Mediterranean to Cape Town, from Switzerland to Singapore, and from Calcutta to Paris. This article was translated from the French by Sylvia Seeley of our staff.

* * *

Dr. Robert Bergeron (*Ungava Bay, Ungava Peninsula*) is Geologist with the Quebec Department of Mines, so writes with authority on the subject of Ungava's mineral resources. Dr. Bergeron is adding to his already extensive knowledge of the province's geology this summer by accompanying a Quebec Geological Survey party on a field assignment into the Esker area of the Ungava Peninsula.

* * *

Kay Rex (*The Weavers of Witney*) is a well-travelled freelance writer who now lives in Toronto. She is with the Talks and Public Affairs Department of the Canadian Broadcasting Corporation.

ERRATA

Vol. LVI, No. 5, p. 173, line 4: should read "Stony Creek field in Albert County" not Westmorland; line 23 should read "Hillsborough in Albert County" not Westmorland.

* * *

Canadian Association of Geographers Eighth Annual Meeting

Although the University of Alberta has one of the youngest Departments of Geography in Canada, it was an admirable host to the Canadian Asso-

ciation of Geographers which met from 28th to 31st May as part of the 1958 Conference of Learned Societies.

As might have been expected, there was some emphasis on Western and Northwestern Canada and three sessions were devoted to papers covering aspects of urban geography in Edmonton, Calgary and British Columbia; glacial flutings in Alberta; water surplus and deficiency in the Prairie Provinces; permafrost in the Western Arctic and salinity at the mouth of the Mackenzie River. These were supplemented by an afternoon excursion within the greater Edmonton area and an all-day field trip in the countryside around the city.

But Eastern Canada was by no means neglected. Its physical geography was represented by papers dealing with the last glaciation in North-eastern Labrador, Ungava; the physiography of the Eastern Townships of Quebec and the transport of beach materials on Long Point, Lake Erie. There were papers on its economic geography dealing with land use in the Niagara fruit belt; manufacturing in suburban Toronto; the Richelieu Valley and the shipping trade of Newfoundland. Some papers on the geography of foreign areas were also presented, which covered aspects of rural settlements in Spain, population changes in Greece, cryconite phenomena at Thule, Greenland, and farming in the outer Hebrides of Scotland.

At the annual general meeting, it was announced that Professor J. B. Bird of the Department of Geography of McGill University had been elected President for 1958-9. This meeting concluded with a provocative address by the outgoing President, Dr. Trevor Lloyd, who spoke on "The Geographer as a Citizen". Equally provocative was the symposium held on the morning of the last day on "Geography in the School". Professor Weir of the University of Manitoba presented an outline of the status of geography in the social studies curricula of Canadian schools and other speakers gave details of the programmes in Ontario, British Columbia and Alberta.

Among the more than fifty geographers who registered for the meetings were two delegates from sister organizations — Dr. Chauncy D. Harris, President of the Association of American Geographers and Dr. J. Granville Jensen, President of the Association of Pacific Coast Geographers. This was ample evidence that, although Edmonton is the most westerly (and northerly) point at which the association has ever met, the programme was a challenging and successful one.

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THE TRAVEL CORNER



A party of canoeists pause to examine the Indian pictographs on a cliff on Lac la Croix in Quetico-Superior Park.

U.S. Forest Service.

Quetico-Superior — Wilderness Heritage

It is very easy for the city dweller, wandering in his maze of steel and concrete, to lose touch with nature or even forget that it exists. Worse still, he may forget that the land was once undefiled — that the littered beaches, burnt and mutilated forests, and denuded plains were not always in that state and need not be so. Ironically, although the very existence of his city depends upon the wilderness and its ecological balance, he must be educated to conserve this priceless heritage with its natural resources and wild life. At the same time he may discover, when he comes to examine it, that the wilderness has another subtler gift to offer: since time immemorial it has been recognized as a refuge for the human spirit. Our own North American Indians understood this. Among them, a young man seeking visions and insight left the tribe

and lived apart for a time in the wilds. During this century small groups of men all over the world, awakening to the intrinsic value of the untouched lands, have established national parks to conserve them.

In the east-central region of North America one of the finest public parks is Quetico-Superior, which lies astride the international boundary west of Fort William. Its area is about 16,000 square miles, but close to forty per cent of it consists of lakes and rivers. This picturesque labyrinth of waterways is one of the most delightful on the continent for canoeing. It is also something of a Mecca for geologists because of its rock formations, and for archaeologists because of its records of the past.

Commercialism in all forms has been kept from Ontario's Quetico Provincial Park and its American counterpart, Superior National Forest. The preservation of the area and

the study of its natural and historic features is the object of the Quetico Foundation, an organization of business men. Except for the park airplane used for patrol, the only access to the area is by water. Nevertheless, last year travel permits were issued to 14,678 persons who wished to spend holidays on its waterways, and 23,102 more visitors checked in at the French Lake headquarters.

Early this year construction was to commence on a causeway to link Fort Frances with the east shore of Rainy Lake. From here there is to be a ninety-mile highway joining the one already connecting Atikokan with Fort William and Port Arthur. When this is completed, there will be easy access to the park by land from Mid-Western Canada and the United States. When the remaining sections of the Trans-Canada Highway are completed around the northern shore of Lake Superior, still more visitors from Eastern Canada and the United States may be expected.

Poets have written many lyrical lines about the rewards awaiting those who respond to the call of the wilds. But, perhaps it would not be amiss to insert a reminder here that if a camping vacation is to be an enriching experience, it is just as well to acquire certain skills and a knowledge of wilderness etiquette ahead of time. Too many inexperienced campers read their brochures too late — after cardboard cartons have been ruined by rain, after loads that were too heavy have been portaged, and after food not properly stored for the night has been devoured by bears.

One good starting point for an excursion into the park is Fort William. From here a road follows the Kamanistiquia River, once traversed by Indians, voyageurs and explorers. It is worth pausing along the way to see Kakabeka Falls, which cascades over a 130-foot drop between dark cliffs. Farther along, one may take the old Dawson Trail for a distance. It was begun in the 1860s as a short cut to the Lake of the Woods region and was completed a few years later by Canadian troops moving westward to put down the Riel Rebellion. It is a narrow, twisting, hilly road, still in primitive condition, but emerges on a highway that runs past French Portage to the entrance of Quetico Provincial Park.

Probably one of the more interesting canoe trips in the park is that from French Lake to Lac la Croix over the historic route of the voyageurs. It should not be undertaken by inexperienced canoeists and the services of a guide should be obtained. After crossing French Lake, you

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travel along Pickerel River, then down the length of Pickerel Lake with its tree-covered islands. The next day you cross the lake, traverse the chain of lakes called Bisk, Beg, Bud and Fern, sail down another Pickerel River and across Olifaunt Lake to Sturgeon Narrows. The following day you shoot the seething rapids on the swift, shallow Maligne River and portage around its water-falls.

The voyage ends on the sandy shore of Lac la Croix, which lies between hills whose principal forest cover is red pines, jack pines and poplars. Chipmunks and red squirrels abound here, while in the deep woods there are deer and bears. Down the lake, high on a granite cliff, may be seen a group of Indian pictographs — crude drawings in a primitive red paint. There are others elsewhere in the park. Many a thoughtful visitor has paused to give them his own interpretation. At the very least they serve as a reminder here in the wilderness that others long ago passed before him, tasted its joys and learned how to value it.

Reservations For 1960 Olympic Games

This month reservations open for accommodation during the 1960 Olympic Games in Rome. Tickets of admission to the games go on sale also. An official bulletin containing information about the organization of the games is being published in English. Copies may be obtained from the Editorial Office, Via Crescenzo 14, Rome, Italy.

Camping Sites in Newfoundland

Five overnight camping sites are opening this summer in Newfoundland. This is the province's initial step in an over-all plan which calls for picnic sites at thirty-five-mile intervals and camp sites at intervals of about 100 miles. The new camp sites are at Butter Pot Park, near Holyrood; Bellevue Beach, Trinity Bay; Indian Pond, near the junction of the Trans-Canada Highway and the Lewisporte Road; Barachois Brook, near St. George's; Sir Richard Squires Memorial Park on West Newfoundland's Upper Humber River; and at Bonne Bay Big Pond on the Bonne Bay Road.

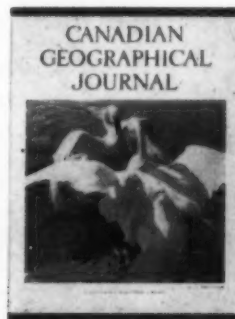
At Stratford, Connecticut

Last month the fourth summer season of the American Shakespeare Festival Theatre commenced at Stratford, Connecticut. It continues until 14 September. The plays being presented are *Hamlet*, *A Midsummer Night's Dream*, and *The Winter's Tale*. The company includes June Havoc, Geraldine Fitzgerald and Morris Carnovsky.

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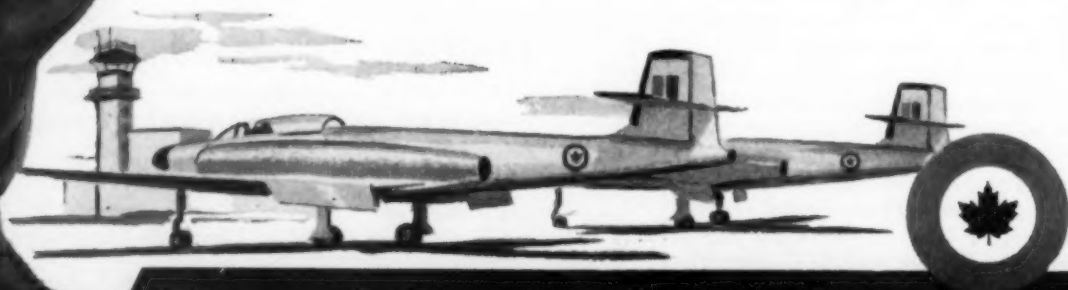
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AMONGST THE NEW BOOKS

Man's Role In Changing The Face of the Earth

Edited by William L. Thomas Jr.
The University of Chicago Press,
Chicago. \$12.50

Somebody once characterized the twentieth century as an age of conventions. 'Conventioning' is a condition that applies to all walks of life. Every once in a while these conventions make a real contribution to modern life and to the understanding of life as a whole. Such is the case with the International Symposium on Man's Role in Changing the Face of the Earth, held at Princeton, New Jersey, in June 1955. This symposium was made possible by the Wenner-Gren Foundation for Anthropological Research. Seventy scientists representing twenty-four disciplines and from ten countries contributed to the symposium.

The symposium consisted of two phases. The first consisted of a series of invited background papers which were written in advance and distributed to the participants before the actual meetings. The second was the meeting together of many of these scientists for discussions of the papers. The book consists of the papers and a report on the discussions. The background papers were not read at the meetings. There seems to be a good deal of merit in arranging a symposium in this fashion. Time is not spent in listening, but in active discussion, and it is out of discussion that ideas develop.

The central theme of the book follows the title. The various participants attempt to assess the role man has played in changing the face of the earth. Beyond that, they are concerned with the effect these changes have had, and with what con-

trols man must exercise upon future changes. To be sure, there is not agreement on the ability of man to alter the earth on which he lives. There is, however, a very apparent feeling that man has tended to underestimate his role as an active agent for change.

A thorough critical review should probably comment upon each paper and upon the discussion. If this were done, the review would become long and tedious. There can be no doubt that this symposium and its printed record have made a significant contribution to our understanding of the man-land relationship. It is a book which should appeal to all scientists, social and physical. In addition, it should appeal to many lay people who are also interested in man's future on this planet. The material in this book constitutes a liberal education in itself. It should occupy a prominent place in the courses and study schedules of all universities.

GORDON D. TAYLOR

Mr. Gordon Taylor is a geographer in the Provincial Parks Branch of the British Columbia Department of Recreation and Conservation.

* * *

Europe and its Borderlands

by Alan G. Ogilvie
(Thomas Nelson and Sons,
Toronto. \$9.25)

This book was the late Professor Ogilvie's last contribution to the study of geography. Unfortunately his sudden death prevented him from bringing it to absolute completion, so that we owe a great debt to his colleague, Dr. C. J. Robertson, for adding a few sections and preparing the whole for publication.

"The purpose of the book is to examine the geography of Europe and its borderlands as the theatre of Western civilization, to study first the various natural phenomena which, by their action and reaction, compose the physical environment of the 'Western' peoples, then to recognize and record in a general way the results of human activity upon these natural features of the habitat." This, as the author points out, is no easy task, but the way in which he has done it, is a masterly example of geographical analysis and synthesis. To those who are accustomed to modern specialized vocabulary, Professor Ogilvie's introduction is a lesson in itself, reminding us of the basic realities of the geographical approach which lie in the attempts to answer the three questions—What is it? Where is it? and Why is it there?

(Continued on page XV)



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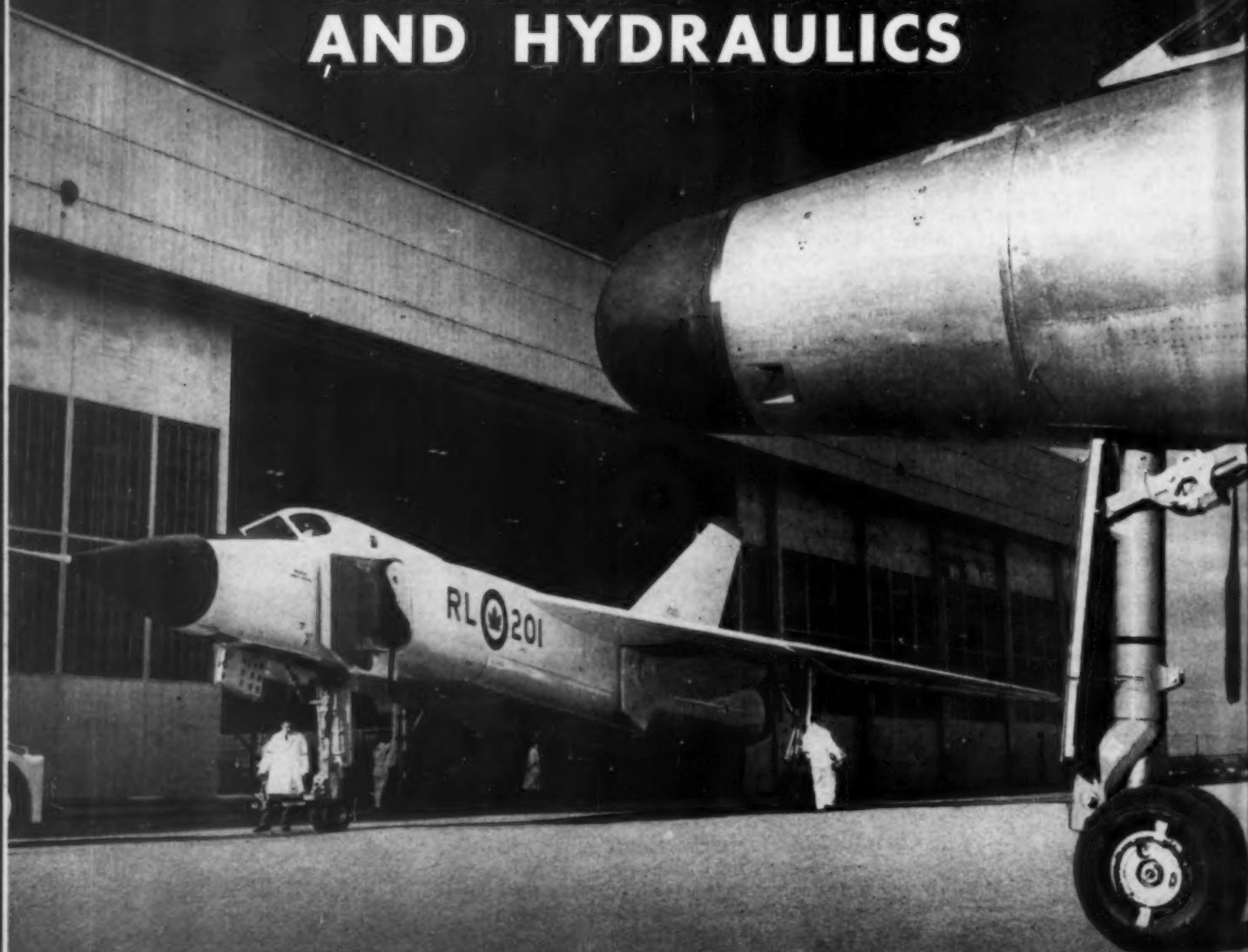
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Continued from page XIII)

indeed the lucidity of his style and expression throughout the book is refreshing but let it not beguile the reader into the impression that it must have been written lightly.

The first nineteen of the twenty-eight chapters are concerned with Europe as a whole. The chapters themselves have titles such as Economic Minerals, The Oceans and Seas, Fisheries, Climate, Rivers, Vegetation, Fauna; but the text constantly stresses the interdependence of such factors. The fisheries are linked with the physical geography of the oceans and seas; it is in the chapter on climate that we find, for example, maps showing the distribution of certain plants because vegetation is "the mirror of climatic elements"; the chapter on rivers is not merely confined to their physical aspects but also deals with river fisheries, the uses of the water itself, canals and river transportation, the limitation imposed by ice and their use for power generation, for "apart from the abundance of soil in the valleys, rivers possess a fourfold attraction for man". Human affairs are never far from the author's mind. In fact, three chapters (Man and his Culture, The Human Imprint, and Frontiers and States) are almost exclusively concerned with human geography and a chapter on Population (distribution and density) follows several on economic geography.

The nine concluding chapters of the book deal with the principal regions of Europe. The divisions are clearly the result of a great deal of careful judgment. Sometimes they are based on physical factors, at other times on political boundaries and at still other times on human factors, particularly linguistic and religious boundaries.

All of the illustrations in the book are maps and diagrams—excellent in quality and clarity. This may shock some North Americans who are accustomed to a liberal dose of glossy photographs with their geography but to others it may be a welcome relief and an inspiration. This is undoubtedly a book that should be welcomed by geographers, for whom its sound scholarship alone should be an attraction. But it should also appeal to the general public for it provides a broad picture of one of the key areas of the Western World and does so in an easily readable and stimulating manner.

N. L. NICHOLSON.

Dr. N. L. Nicholson is Director of the Geographical Branch, Department of Mines and Technical Surveys which is responsible for the new Atlas of Canada.

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